

PATENT ABSTRACTS OF JAPAN

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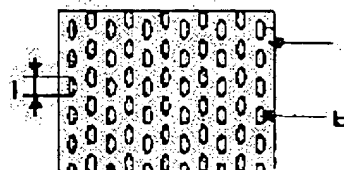
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(54) KNIT MATERIAL AND WASHING NET

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent a reverse contamination by providing framework forming parts and mesh forming parts buried in them, permitting the max. length of the opposing framework forming parts to be a specified range of length and setting the ratio of the whole areas in the mesh forming parts to the whole area of a knit material to be within a specified range.

SOLUTION: This knit material consisting of synthetic fiber multi-filaments constituted of a base material such as the filament of polyamide series, polyester series and polypropylene series is constituted of the framework forming parts (a) and the mesh forming parts (b) buried in them. Then, the max. interval of the opposing framework forming parts (a) is made to be more than 0.3 cm and less than 1.3 cm and also the ratio of the whole areas of the parts (b) to the whole areas of the knit material is set within the range of 30-80%. Thus, fine waste such as waste cotton and waste thread is prevented from being stuck to the wash without damaging basic performance as a washing net such as an extending nerve and water permeability.



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CLAIMS

[Claim(s)]

[Claim 1] Knitting fabric which is the knitting fabric which mainly consists of synthetic-fiber multifilament thread, has the skeleton organization section and the mesh organization section which buries the meantime, and the maximum gap of the skeleton organization section which faces each other is 0.3cm or more less than 1.3cm, and is characterized by a ratio of a whole surface product of the mesh organization section to a whole knitting fabric surface product becoming 30 - 80%.

[Claim 2] Knitting fabric according to claim 1 characterized by a mesh of said mesh organization section consisting of a nest configuration of spider.

[Claim 3] Knitting fabric according to claim 1 or 2 to which said skeleton organization section is characterized by synthetic-fiber multifilament with a single fiber fineness of 2 deniers or more and said mesh organization section consisting of synthetic-fiber multifilament with a single fiber fineness of 1 denier or less.

[Claim 4] claims 1-3 -- a network for wash characterized by becoming either from knitting fabric of a publication.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention prevents adhesion for the washing of fine waste, such as ****, waste thread, etc. which are generated at the time of wash, absorbs the wash contamination liquid by oily matter and color omissions, such as sweat and body fat, and relates to the network for wash having the effect of preventing reverse contamination.

[0002]

[Description of the Prior Art] Clothing various in recent years type is marketed, and a consuming public came to own many clothing to that in which waste thread tends to appear from that in which inferior goods and waste thread cannot appear from quality articles easily. Therefore, the present condition is that an opportunity to wash to coincidence various clothing which was mentioned above increases in case it washes, consequently many troubles [be / it / as carrying out reverse contamination **** /, and] at the time of wash came to occur. [that **** waste thread, etc. adhere to other clothing] Originally, it is the first purpose that the network for wash protects clothing from friction by wash. However, many things for which the mesh portion of the network for wash is made fine have been performed as an attempt which prevents ****, waste thread, etc. adhering to other garments. Since the mesh portion is naturally fine, this does not let fine waste, such as ****, pass, but if a mesh portion is fine, water penetration and water omission nature will worsen, consequently rinse nature will also worsen. Furthermore, in order to make the total fineness thin in order to make the fine-mesh organization section, and to attain that it is | of "protecting clothing from friction of wash"] the first purpose of the network for wash, it is also a big problem that the flare waist of the indispensable ground is no longer obtained.

[0003] On the contrary, if the total fineness is made thick in order to obtain the flare waist, the eye of the mesh organization section will surely become coarse, and it will let fine waste, such as ****, pass. While the total fineness has been thick, when the mesh organization section is composed finely by force, the hole of a mesh portion is buried and it stops furthermore, achieving the function of the network for wash at all.

[0004] Moreover, the present condition is having to wash independently the object with severe garments which the reverse pollution-control effect which comes from any network for wash absorbing oily matter and the wash contamination liquid by color omission does not have, and are easy to carry out color omission and dirt.

[0005]

[Problem(s) to be Solved by the Invention] The present condition is that the network for wash which consists of knitting fabric which can have the flare waist, and the water penetration and water omission nature which are demanded as a network for wash for the trouble of these versatility, can prevent waste with still finer **** etc. adhering to the washing in the network for wash. can absorb oily matter and the wash contamination liquid by color omission, and can prevent reverse contamination is not obtained.

[0006] This invention has the flare waist, and the water penetration and the water omission nature

required of the network for wash so it solves the defect of the network for wash which consists of knitting fabric which consists of this Prior art, and it does not let waste with still finer **** etc. pass, but even oily matter and the wash contamination liquid by color omission absorb it, and the knitting fabric for a network for wash and the network for wash with the function of preventing reverse contamination carry out as an offer plug by low cost.

[0007]

[The means for solving invention] This invention has the following configurations, in order to solve this technical problem.

[0008] That is, it is the knitting fabric which mainly consists of synthetic-fiber multifilament thread, and has the skeleton organization section and the mesh organization section which buries the meantime, and the maximum gap of the skeleton organization section which faces each other is 0.3cm or more less than 1.3cm, and the ratio of the whole surface product of the mesh organization section to a whole knitting fabric surface product is the knitting fabric used as 30 - 80%.

[0009] Moreover, the network for wash of this invention consists of the above-mentioned knitting

[0010]

[The practical gestalt of invention] The place wholeheartedly examined so that this invention may develop the knitting fabric for a network having the flare waist, and the water penetration and water omission nature which are required of the network for wash for wash, If the knitting fabric which consists of the skeleton organization section and the mesh organization section is made and the rate of the mesh organization section occupied to the distance and the whole surface product between the skeleton organization section which faces each other is made **** The fundamentality ability as networks for wash, such as the flare waist, and water penetration and water omission nature, is held. Further It studies that it can have ***** which does not let fine waste, such as ****, pass, and "the filter function by super-thin fiber" to absorb oily matter and the wash contamination liquid by color omission, and to prevent reverse contamination. Reverse contamination here is that the once washed-out dirt sticks to garments fiber again, and it leads to the graying of a synthetic fiber, especially a hydrophobic synthetic fiber.

[0011] as synthetic-fiber multifilament which constitutes the knitting fabric of this invention, it is a polyamide system, a polyester system, and a polypropylene system line of thread, and the knitting fabric edited by the intersection which used 100% of these each, or combined those multifilament lines of thread can be used. Polyester super-thin fiber is desirable also especially in these, and the knitting fabric which will become from now on is excellent in the reverse pollution-control effect made into the purpose of this invention.

[0012] Although a gray yarn gestalt is desirable, if it is the degree which does not spoil the endurance as a network for wash as a line-of-thread gestalt, it is satisfactory even if it performs false twist processing.

[0013] As a thread gestalt of the synthetic fiber which constitutes knitting fabric, it is not a monofilament, and multifilament is used. The wash contamination liquid absorptivity in the case of a monofilament, the flare waist made into the purpose is difficult to get, and according to oily matter and color omission is not acquired.

[0014] As the number of filaments of multifilament, the line of thread which constitutes the skeleton organization section has five to 100 desirable filament, in order to give the flare waist, and the line of thread which constitutes the mesh organization section has 80 to 1000 desirable filament, in order to absorb oily matter and the wash contamination liquid by color omission in order not to let **** etc. pass, and to prevent reverse contamination. Furthermore, 200 to 1000 filament is desirable.

[0015] As a class of knitting fabric, especially if mesh-like structure can be composed, it is not limited, but the tricot ground, the rales ground, the round-braid ground, etc. can be used.

[0016] The maximum gap of the skeleton organization section which the knitting fabric used by this invention faces is set to 0.5cm or more less than 1.5cm. When this skeleton organization section exists, and this knitting fabric is considered as the network for wash and carries out sewing, the moderate flare waist, and water penetration and water omission nature can be obtained. The water penetration and

water omission nature the maximum gap of the skeleton organization section which this knitting fabric faces becomes what has the fine mesh organization section inevitably in less than 0.3cm, and is [nature] an indispensable function get worse, consequently rinse nature also gets worse. Moreover, since the area of the mesh organization section increases that it is 1.3cm or more, it becomes difficult to obtain the moderate flare waist. By specifying the maximum gap of this skeleton organization section that faces each other, the skeleton organization section and the mesh organization section can be balanced, and it is realized as knitting fabric for a network for wash.

[0017] The ratio of the whole surface product of the mesh organization section [as opposed to a whole knitting fabric surface product in the knitting fabric used by this invention] is 30 - 80% of range. Since the rate that the skeleton organization section to a whole knitting fabric surface product occupies becomes high when this surface ratio is less than 30%, there is orientation for the flare waist to become strong too much. Furthermore, since the portion which absorbs oily matter and the wash contamination liquid by color omission decreases, reverse pollution-control nature gets worse. Since the rate that the skeleton organization section to a whole surface product occupies decreases when this surface ratio exceeds 80%, it becomes impossible to obtain the flare waist required as a network for wash, and it becomes impossible moreover, to protect the clothing which is the first purpose of the network for wash.

[0018] As for the mesh organization section of the knitting fabric used by this invention, consisting of a nest configuration of the spider is desirable. The nest configuration of the spider here is a configuration which connects between the skeleton organization sections in the ground where the fine hole opened. As for the area of the viewpoint received water penetration and water omission nature to a hole, it is desirable that it is [0.03-0.1cm] about two, without passing fine waste, such as ****.

[0019] The single fiber fineness of the skeleton organization section of the knitting fabric used by this invention has desirable 2 deniers or more, and the single fiber fineness of the mesh organization section has desirable 1 denier or less. Furthermore, division and **** type fiber 0.2 deniers or less have the desirable single fiber fineness of the mesh organization section. When the single fiber fineness of the skeleton organization section is less than 2 deniers, the flare waist demanded as a network for wash is not obtained. Moreover, when the single fiber fineness of the mesh organization section exceeds 1 denier, fine waste, such as ****, does not absorb the wash contamination liquid by the oily matter and the color omission of a thing which can be taken, but reverse pollution-control nature gets worse.

[0020] Although silk manufacture can also be directly carried out to super-**** with a super draw method, super-thin fiber 1 denier or less can be easily obtained, if silk manufacture is preferably carried out as a bicomponent fiber which once consists of two or more sorts of polymer components, and at least 1 component is separated from this bicomponent fiber and it is made super-thin fiber. Still more preferably, by carrying out silk manufacture to a sea-island type bicomponent fiber or an assembled-die bicomponent fiber, the deseas is carried out, only an island component is separated from a sea-island type bicomponent fiber as super-thin fiber, and it can divide into each component, and it can dissociate as super-thin fiber and the at least 1 component can be obtained from an assembled-die bicomponent fiber. Moreover, especially the cross-section configuration of a single fiber is not limited, but can use a round-head cross section, a triangular cross section, and other variant cross sections.

[0021] It is not limited especially if the shape of surface type of the knitting fabric used by this invention consists of the skeleton organization section and the mesh organization section, and the shape of the shape of the shape of a tortoise shell and a grid and a dot etc. is mentioned.

[0022]

[Example] Hereafter, an example explains this invention in more detail. In addition, the property was measured by the following method.

[0023] The knitting fabric surface was photoed by one 20 times the scale factor of this using the micro watcher (MODEL US90S) by [maximum gap of the skeleton organization section which faces each other] Mitsubishi Electric Corp. The maximum gap was measured on this photograph and that value was carried out 1/20. Ten different places were photoed and the average was made into the maximum gap.

[0024] Specifically, the value of 1 in knitting fabric surface structure model drawing of drawing_1 shows.

[0025] The whole surface product of the mesh organization section to a whole knitting fabric surface product was measured by [of the mesh organization section to whole [surface product] photoing] knitting fabric surface by one 20 times the scale factor of this by said micro watcher comparatively, and tracing the area of the mesh organization section by the Uchida digital planimeter (KP-90) on the photograph. The rate is expressed with percentage.

[0026] Three samples with a [flare waist] diameter of 10 inches are extracted, and one sample is set to a drape circuit tester (YD100 mold). When the value which averaged the measured value of three sheets, respectively is set to X, the drape coefficient Y is expressed with the following formulas.

[0027] Drape coefficient $Y = \{1 - (X - 126.7) / 380\} \times 100$ (it applies to L-1096 6.19.7 JIS G law)

There is the flare waist, so that the value of this Y is small, and I hear that there is not the flare waist in it, and it is in it, so that it is large conversely.

[0028] In the case of Ikuji for a network for wash, that whose drape coefficient is 40 to about 60 is desirable.

[0029] As shown in water penetration and [water omission nature (rinse nature)] drawing 4 , a sample is set inside a funnel with a diameter of 15cm. the funnel -- 300 cc of tap water -- pouring -- a funnel -- time amount until water disappears from the interior is measured with stop watch. Let this into a repeat 3 times and let the average be measured value.

[0030] The water omission nature of the knitting fabric for a network for wash has 10 or less desirable seconds. When water omission nature is larger than 10 seconds, migration of the water in the network inside and outside for wash under wash is barred, and rinse nature gets worse.

[0031] The plain weave fabric (AUW including the network for wash of 500g) of indigo dyeing which is easy to carry out color omission is put into the network for [reverse pollution-control nature] wash, and it is JIS L-0217 It washes according to 103 law. After repeating this 5 times, the network for wash is air-dried and it judges with gray scale. The evaluation is made into the four following steps.

[0032] O : absorb the wash contamination liquid by color omission very much.

[0033] O : absorb the wash contamination liquid by color omission.

[0034] **: Seldom absorb the wash contamination liquid by color omission.

[0035] x: Don't absorb the wash contamination liquid by color omission at all.

[0036] Next, the contamination agent shown in weak alkaline synthetic detergent (the 1st sort of JIS K 3371 alkalescence) and a table 1 is mixed so that a weight ratio may be set to 7:3. Water is added making them scour mutually, and it dilutes so that a contamination agent may become 0.075%. In addition, a contamination agent uses the object which mixed A:oiliness contamination agent and B:dryness contamination agent by 3:1. Using 25l. of this diluted solution, 500g (polyester 100% and double-sided smooth editing ***) of white grounds is put into the network for wash, and it is JIS L-0217 It washed according to 103 law.

[0037]

[A table 1]

A : 油性汚染剤

薬品名	組成 (重量%)	規格
ステアリン酸	12.5	JIS K8585
オレイン酸	12.5	JIS K8218
硬化油	12.5	JIS K3331の普通品
オリーブ油	12.5	試薬CP級のもの
セチルアルコール	8.5	JIS K8596
固形パラフィン	21.5	JIS K2235のNo. 140
コレステロール	5.0	JIS K8350
カーボンブラック	15.0	玉川カーボンブラック

B : 乾性汚染剤

薬品名	組成 (重量%)	規格
粘土	55.0	信楽粘土
ポルトランドセメント	17.0	JIS R5210
シリカゲル	17.0	JIS K8885
酸化第2鉄	0.50	試薬CP級のもの
n-デカン	8.75	試薬EP級のもの
カーボンブラック	1.75	玉川カーボンブラック

The ground of this white was air-dried and the comparison test was carried out to Ikuji before wash with gray scale. The evaluation is made into the four following steps.

[0038] O : absorb the wash contamination liquid by oily matter very much.

[0039] O : absorb the wash contamination liquid by oily matter.

[0040] **: Seldom absorb the wash contamination liquid by oily matter.

[0041] x: Don't absorb the wash contamination liquid by oily matter at all.

[0042] The existence of the reverse pollution-control effect is judged by carrying out two kinds of wash contamination liquid absorptivity trials above.

[0043] The black ground (100% of cotton, double-sided smooth knitting fabric) which made it the surroundings frayed so that it may be easy to generate [*****] ****, and the white ground (100% of cotton, double-sided smooth knitting fabric) are prepared. It is JIS to coincidence about the black ground (weight of 250g), and the ground (AUW including the network for wash of 250g) of the white put into the network for wash. L-0217 It washes according to 103 law. After repeating this 5 times, the number of ***** which adhered in 100cm² of white grounds is measured. Therefore, ***** is so high that there are few numbers, and ***** will be low, so that many.

[0044] Generally with [the number of ****] 25 [or less], it is not worrisome in 100cm².

[0045] [Comprehensive evaluation] As a result of carrying out each above-mentioned evaluation, on the whole, it saw and judged in the four following steps.

[0046] O : it is very suitable as Ikuji for a network for reverse pollution-control wash.

[0047] O : it is suitable as Ikuji for a network for reverse pollution-control wash.

[0048] **: It is seldom suitable as Ikuji for a network for reverse pollution-control wash.

[0049] x: It is not suitable at all as Ikuji for a network for reverse pollution-control wash.

[0050] The polyester filament by Toray Industries, Inc. of the 1> 400 denier 50 filaments of < examples has been arranged in the skeleton organization section, the nylon filament by Toray Industries, Inc. of 75-denier 72 filaments has been arranged in the mesh organization section, and the shape of surface type as shown in drawing 1 obtained the knitting fabric for dot-like the network for wash.

[0051] Dyeing and finish of this polyester and the knitting fabric edited by the nylon intersection were performed, and eyes obtained 262g/the white knitting fabric of m².

[0052] This knitting fabric was that whose percentage of the mesh organization section [as opposed to 0.5cm and a whole surface product in the maximum gap of the skeleton organization section which faces each other] is 32%.

[0053] The network for wash is made as an experiment using this knitting fabric, and it is JIS with a

domestic washing machine. L-0217 As a result of performing five wash according to 103 law, it was satisfactory about reinforcement as Ikuji for a network for wash, and satisfactory also to the detergency, rinse nature, and reverse pollution-control nature of contents. The details of these evaluation results are shown in a table 2.

[0054] The polyester filament by Toray Industries, Inc. of the 2> 200 denier 48 filaments of < examples has been arranged in the skeleton organization section, the polyester filament by Toray Industries, Inc. of 50-denier 700 filaments has been arranged in the mesh organization section, and the shape of surface type as shown in drawing 2 obtained the knitting fabric for tortoise shell-like the network for wash.

[0055] Dyeing and finish-machining of this polyester knitting fabric were performed, and eyes obtained 241g/the white knitting fabric of m2.

[0056] This knitting fabric was that whose percentage of the mesh organization section [as opposed to 0.8cm and a whole surface product in the maximum gap of the skeleton organization section which faces each other] is 65%.

[0057] The network for wash is made as an experiment like an example 1 using this knitting fabric, and it is JIS. L-0217 As a result of performing five wash according to 103 law, it was satisfactory about reinforcement as Ikuji for a network for wash, and satisfactory also to the detergency, rinse nature, and reverse pollution-control nature of contents. The details of these results are collectively shown in a table 2.

[0058] The polyester filament by Toray Industries, Inc. of the 3> 280 denier 120 filaments of < examples has been arranged in the skeleton organization section, the polyester filament by Toray Industries, Inc. of 80-denier 900 filaments has been arranged in the mesh organization section, and the shape of surface type as shown in drawing 3 obtained the knitting fabric for grid-like the network for wash.

[0059] Dyeing and finish-machining of this polyester knitting fabric were performed, and eyes obtained 253g/the white knitting fabric of m2.

[0060] This knitting fabric was that whose percentage of the mesh organization section [as opposed to 1.1cm and a whole surface product in the maximum gap of the skeleton organization section which faces each other] is 79%.

[0061] The network for wash is made as an experiment like an example 1 using this knitting fabric, and it is JIS. L-0217 As a result of performing five wash according to 103 law, it was satisfactory about reinforcement as Ikuji for a network for wash, and satisfactory also to the detergency, rinse nature, and reverse pollution-control nature of contents. The details of these results are collectively shown in a table 2.

[0062] The same polyester filament by Toray Industries, Inc. as what was used for the skeleton organization section of the <example 1 of comparison> example 2 has been arranged in the skeleton organization section, the nylon filament by Toray Industries, Inc. of 75-denier 36 filaments has been arranged in the mesh organization section, and the shape of surface type as shown in drawing 1 obtained the knitting fabric for a dot-like wash network.

[0063] Then, like the example 1, dyeing and finish of this polyester and the knitting fabric edited by the nylon intersection were performed, and eyes obtained 259g/the white knitting fabric of m2.

[0064] This knitting fabric was that whose percentage of the mesh organization section [as opposed to 0.2cm and a whole surface product in the maximum gap of the skeleton organization section which faces each other] is 24%.

[0065] The network for wash is made as an experiment like an example 1 using this knitting fabric, and it is JIS. L-0217 Although it was satisfactory about reinforcement as Ikuji for the network for wash as a result of performing five wash according to 103 law, the detergency, rinse nature, and reverse pollution-control nature of the washing in the network for wash were what a little inferior. The details of these results are collectively shown in a table 2.

[0066] The polyester filament by Toray Industries, Inc. of the 2> 75 denier 36 filaments of < examples of a comparison has been arranged in the skeleton organization section and the mesh organization section, and the shape of surface type as shown in drawing 3 obtained the knitting fabric for grid-like the

network for wash.

[0067] Then, like the example 2, dyeing and finish of this polyester knitting fabric were performed, and eyes obtained 239g/the white knitting fabric of m2.

[0068] This knitting fabric was that whose percentage of the mesh organization section [as opposed to 1.3cm and a whole surface product in the maximum gap of the skeleton organization section which faces each other] is 84%.

[0069] The network for wash is made as an experiment like an example 1 using this knitting fabric, and it is JIS. L-0217 Although it was satisfactory to the detergency of the washing in the network for wash, and rinse nature as a result of performing five wash according to 103 law, it was what is a little inferior to reverse pollution-control nature, and has a problem in the flare waist as Ikuji for the network for wash. The details of these results are collectively shown in a table 2.

[0070] Like the <example 3 of comparison> example 2, the polyester filament by Toray Industries, Inc. of 200-denier 48 filaments has been arranged in the skeleton organization section, and the shape of surface type as shown in drawing 2 from which the mesh organization section became a cavity obtained the knitting fabric for a grid-like wash network.

[0071] Then, like the example 2, dyeing and finish of this polyester knitting fabric were performed, and eyes obtained 224g/the white knitting fabric of m2.

[0072] This knitting fabric was that whose percentage of a cavity of as opposed to 0.7cm and a whole surface product in the maximum gap of the adjacent skeleton organization section is 68%.

[0073] The network for wash is made as an experiment like an example 1 using this knitting fabric, and it is JIS. L-0217 Although it was satisfactory about reinforcement as Ikuji for the network for wash and the detergency of contents and rinse nature were also satisfactory as a result of performing five wash according to 103 law, it was that in which reverse pollution-control nature and ***** are very inferior. The details of these results are collectively shown in a table 2.

[0074]

[A table 2]

	糸使い	目付 (g/m ²)	表面形状	向かい合 う骨組み 編成部の 最大間隔 (cm)	全面積に 対するメ ッシュ編 成部の割 合 (%)	張り腰 (ドレー プ係数)	透水・ 水抜け性 (すすぎ 性) (S)	逆汚染 防止性 染料 落ち	油性 物質	防着性	総合評価
実施例 1	T400- 50 N 75- 72	262	ドット状	0.3	32	42	9.2	○	○	21	○
実施例 2	T200- 48 T 50-700	241	亀甲状	0.6	65	55	6.5	◎	◎	4	◎
実施例 3	T280-120 T 80-900	253	格子状	1.1	79	59	7.6	◎	◎	7	○
比較例 1	T400- 50 N 75- 36	259	ドット状	0.2	24	39	13.0	△	×	33	×
比較例 2	T 75- 36 T 75- 36	239	格子状	1.3	84	68	6.2	△	△	36	△
比較例 3	T200- 48 無し	224	亀甲状	0.7	68	50	3.6	×	×	119	×

(注) 糸使い 上段: 骨組み編成部糸多
下段: メッシュ編成部糸多
T: ポリエステル N: ナイロン

[0075]

[Effect of the Invention] Without according to this invention, spoiling the fundamentality ability as

networks for wash, such as the flare waist and water omission nature, when it is used as a network for wash, it can prevent fine waste, such as **** and waste thread, adhering to the washing, and the wash contamination liquid by oily matter and color omissions, such as sweat and body fat, can be absorbed, and the knitting fabric for a network having the screen effect which prevents reverse contamination for wash can be offered. It is applicable to a filtration cloth, a filter, etc. from this knitting fabric besides the network for wash.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is knitting fabric surface structure model drawing in the example 1 and the example 1 of a comparison of this invention.

[Drawing 2] It is knitting fabric surface structure model drawing in the example 2 and the example 3 of a comparison of this invention.

[Drawing 3] It is knitting fabric surface structure model drawing in the example 3 and the example 2 of a comparison of this invention.

[Drawing 4] It is model drawing of the water omission nature appraisal method in this invention.

[Description of Notations]

a: The skeleton organization section which forms the knitting fabric surface

b: The mesh organization section which forms the knitting fabric surface

c: Knitting fabric in this invention

d: Water

l: The maximum gap of the skeleton organization section in this invention which faces each other

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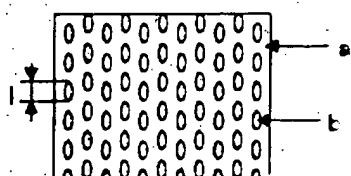
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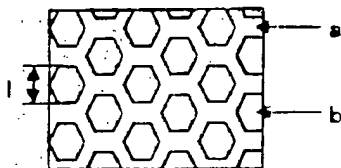
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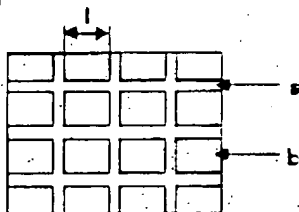
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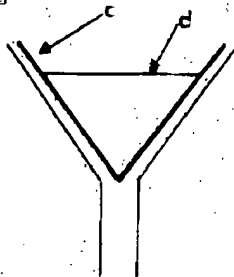
[Drawing 2]



[Drawing 3]



[Drawing 4]



[Translation done.]

